



US005673259A

**United States Patent** [19]**Quick, Jr.****[11] Patent Number: 5,673,259****[45] Date of Patent: Sep. 30, 1997****[54] RANDOM ACCESS COMMUNICATIONS CHANNEL FOR DATA SERVICES****[75] Inventor: Roy F. Quick, Jr., San Diego, Calif.****[73] Assignee: Qualcomm Incorporated, San Diego, Calif.****[21] Appl. No.: 412,648****[22] Filed: May 17, 1995****[51] Int. Cl.<sup>6</sup> ..... H04J 13/00; H04Q 7/30****[52] U.S. Cl. .... 370/342; 370/349; 455/38.3****[58] Field of Search ..... 370/18, 50, 95.1, 370/95.3; 375/200, 205; 455/38.1, 38.2, 38.3; 340/825.44****[56] References Cited****U.S. PATENT DOCUMENTS**

5,241,542 8/1993 Natarajan et al. .... 370/95.3  
 5,384,777 1/1995 Ahmadi et al. .... 370/95.3 X  
 5,491,837 2/1996 Haartsen ..... 370/95.3 X

**FOREIGN PATENT DOCUMENTS**

0642283 3/1995 European Pat. Off. .... H04Q 7/22  
 9405095 3/1994 WIPO ..... H04B 7/24

**OTHER PUBLICATIONS**

Giuseppe Bianchi et al., "Dynamic Channel Allocation Procedures for Packet Data Services over GSM Networks", *ISS '95*, vol. 1, Apr. 1995, pp. 246-250.

Frank Mademann, "General Packet Radio Service—a Packet Mode Service within the GSM", *ISS '95*, vol. 1, Apr. 1995, pp. 36-40.

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In a digital communication system for communicating digital information, the digital communication system having a forward link and a reverse link, a system and method for communicating a data packet. The system comprises a communicating transceiver, from among a number of digital transceivers, for sending the data packet on a random access channel over the reverse link and for receiving the digital information from the forward link. The system also comprises a base station for receiving the data packet on the random access channel from the reverse link and for sending the digital information over the forward link. The digital transceivers share the random access channel. The digital transceivers have a bandwidth demand. The system may also include a dedicated channel for communicating the data packet between the communicating transceiver and the base station and a processor for switching from the random access channel to the dedicated channel when the bandwidth demand exceeds a first threshold, and for switching from the dedicated channel to the random access channel when the bandwidth demand drops below a second threshold. The system is well suited for use in CDMA applications.

**48 Claims, 19 Drawing Sheets**